

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 21 July 2000 (21.07.00)	<b>Applicant's or agent's file reference</b> FP-0589 PCT
<b>International application No.</b> PCT/US99/20468	<b>Priority date (day/month/year)</b> 02 September 1998 (02.09.98)
<b>International filing date (day/month/year)</b> 02 September 1999 (02.09.99)	
<b>Applicant</b> AU-YOUNG, Janice et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 29 March 2000 (29.03.00)

☐ in a notice effecting later election filed with the International Bureau on:  
 \_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Simin Baharlou Telephone No.: (41-22) 338.83.38
---	--

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BILLINGS, Lucy, J.  
Incyte Pharmaceuticals, Inc.  
3174 Porter Drive  
Palo Alto, CA 94304  
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 21 July 2000 (21.07.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference FP-0589 PCT	
International application No. PCT/US99/20468	International filing date (day/month/year) 02 September 1999 (02.09.99)

## 1. The following indications appeared on record concerning:

☒ the applicant
 ☐ the inventor
 ☐ the agent
 ☐ the common representative

## Name and Address

 INCYTE PHARMACEUTICALS, INC.  
 3174 Porter Drive  
 Palo Alto, CA 94304  
 United States of America

## State of Nationality

US

## State of Residence

US

## Telephone No.

## Facsimile No.

## Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
 ☐ the name
 ☒ the address
 ☐ the nationality
 ☐ the residence

## Name and Address

 INCYTE PHARMACEUTICALS, INC.  
 3160 Porter Drive  
 Palo Alto, CA 94304  
 United States of America

## State of Nationality

US

## State of Residence

US

## Telephone No.

## Facsimile No.

## Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

 The International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

## Authorized officer

Simin Baharlou

Telephone No.: (41-22) 338.83.38

## PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
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3174 Porter Drive  
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Applicant's or agent's file reference FP-0589 PCT	
International application No. PCT/US99/20468	International filing date (day/month/year) 02 September 1999 (02.09.99)

## 1. The following indications appeared on record concerning:

☒ the applicant      ☒ the inventor      ☐ the agent      ☐ the common representative

## Name and Address

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## State of Nationality

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## State of Residence

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Telephone No.

Facsimile No.

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person      ☐ the name      ☒ the address      ☐ the nationality      ☐ the residence

## Name and Address

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United States of America

## State of Nationality

US

## State of Residence

US

Telephone No.

Facsimile No.

Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Simin Baharlou

Telephone No.: (41-22) 338.83.38



Janice [US/US]; 233 Golden Eagle Lane, Brisbane, CA 94005 (US). BANDMAN, Olga [US/US]; 366 Anna Avenue, Mountain View, CA 94043 (US). TANG, Y., Tom [CN/US]; 4230 Ranwick Court, San Jose, CA 95118 (US). REDDY, Roopa [IN/US]; 1233 W. McKinley Drive, Sunnyvale, CA 94086 (US). HILLMAN, Jennifer, L. [US/US]; 230 Monroe Drive, #12, Mountain View, CA 94040 (US). YUE, Henry [US/US]; 826 Lois Avenue, Sunnyvale, CA 94087 (US). LAL, Preeti [IN/US]; 2382 Lass Drive, Santa Clara, CA 95054 (US). CORLEY, Neil, C. [US/US]; 1240 Dale Avenue, #30, Mountain View, CA 94040 (US). GUEGLER, Karl, J. [CH/US]; 1048 Oakland Avenue, Menlo Park, CA 94025 (US). GORGONE, Gina [US/US]; 1253 Pinecrest Drive, Boulder Creek, CA 95006 (US). BAUGHN, Mariah, R. [US/US]; 14244 Santiago Road, San Leandro, CA 94577 (US). AZIMZAI, Yalda [US/US]; 2045 Rock Springs Drive, Hayward, CA 94545 (US).

(74) Agents: BILLINGS, Lucy, J. et al.; Incyte Pharmaceuticals, Inc., 3174 Porter Drive, Palo Alto, CA 94304 (US).

(81) Designated States (*national*): AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE,

SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— With international search report.

(88) Date of publication of the international search report: 17 August 2000

(48) Date of publication of this corrected version: 10 May 2001

(15) Information about Correction:  
see PCT Gazette No. 19/2001 of 10 May 2001, Section II

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>C12N 15/12, C07K 14/705, 14/47, 16/18, 16/28, C12Q 1/68, A61K 38/17</b>		A3	(11) International Publication Number: <b>WO 00/12711</b>
			(43) International Publication Date: 9 March 2000 (09.03.00)
(21) International Application Number: <b>PCT/US99/20468</b>		(72) Inventors; and (75) Inventors/Applicants (for US only): AU-YOUNG, Janice [US/US]; 1419 Kains Avenue, Berkeley, CA 94702 (US). BANDMAN, Olga [US/US]; 366 Anna Avenue, Mountain View, CA 94043 (US). TANG, Y., Tom [CN/US]; 4230 Ranwick Court, San Jose, CA 95118 (US). REDDY, Roopa [IN/US]; 1233 W. McKinley Drive, Sunnyvale, CA 94086 (US). HILLMAN, Jennifer, L. [US/US]; 230 Monroe Drive, #12, Mountain View, CA 94040 (US). YUE, Henry [US/US]; 826 Lois Avenue, Sunnyvale, CA 94087 (US). LAL, Preeti [IN/US]; 2382 Lass Drive, Santa Clara, CA 95054 (US). CORLEY, Neil, C. [US/US]; 1240 Dale Avenue, #30, Mountain View, CA 94040 (US). GUEGLER, Karl, J. [CH/US]; 1048 Oakland Avenue, Menlo Park, CA 94025 (US). GORGONE, Gina [US/US]; 1253 Pinecrest Drive, Boulder Creek, CA 95006 (US). BAUGHN, Mariah, R. [US/US]; 14244 Santiago Road, San Leandro, CA 94577 (US). AZIMZAI, Yalda [US/US]; 2045 Rock Springs Drive, Hayward, CA 94545 (US).	
(22) International Filing Date: 2 September 1999 (02.09.99)			
(30) Priority Data:			
09/145,815	2 September 1998 (02.09.98)	US	
Not furnished	2 September 1998 (02.09.98)	US	
09/191,283	12 November 1998 (12.11.98)	US	
Not furnished	12 November 1998 (12.11.98)	US	
09/208,821	9 December 1998 (09.12.98)	US	
Not furnished	9 December 1998 (09.12.98)	US	
09/237,506	26 January 1999 (26.01.99)	US	
Not furnished	26 January 1999 (26.01.99)	US	
09/247,891	10 February 1999 (10.02.99)	US	
Not furnished	10 February 1999 (10.02.99)	US	
(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Applications			
US	Not furnished (CIP)		
Filed on	2 September 1998 (02.09.98)		
US	09/191,283 (CIP)		
Filed on	12 November 1998 (12.11.98)		
US	Not furnished (CIP)		
Filed on	12 November 1998 (12.11.98)		
US	09/145,815 (CIP)		
Filed on	2 September 1998 (02.09.98)		
US	09/208,821 (CIP)		
Filed on	9 December 1998 (09.12.98)		
US	Not furnished (CIP)		
Filed on	9 December 1998 (09.12.98)		
US	09/237,506 (CIP)		
Filed on	26 January 1999 (26.01.99)		
US	Not furnished (CIP)		
Filed on	26 January 1999 (26.01.99)		
US	09/247,891 (CIP)		
Filed on	10 February 1999 (10.02.99)		
US	Not furnished (CIP)		
Filed on	10 February 1999 (10.02.99)		
(71) Applicant (for all designated States except US): INCYTE PHARMACEUTICALS, INC. [US/US]; 3174 Porter Drive, Palo Alto, CA 94304 (US).		(74) Agents: BILLINGS, Lucy, J. et al.; Incyte Pharmaceuticals, Inc., 3174 Porter Drive, Palo Alto, CA 94304 (US).	
		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
		Published With international search report.	
		(88) Date of publication of the international search report: 17 August 2000 (17.08.00)	

(54) Title: HUMAN MEMBRANE CHANNEL PROTEINS

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12  VEPQPGAGEDEPVSAGESSAEETVSDTESPEVETLQINQGLGHQPGHMDVVA 1568324
V P P ++ A P E P PE EQ+ +P + AA
8  VLPQPGTQKTEGAGFQETESKPEANQPEP-EUQPEPEPE-EPPEPEPEPEEA  GI 2924369
72  ESTEDL---KALSEDEEDGGVAGEPESLLPSPVLDQSVIAPVSSPSSSS-AAGE 1568324
+ L ++ +E+ EG+QE+ PP QAV V +R SS +
66  PEVQLPPEEPVEGDAEAGESLQETQADPQPTSQQA-----WKVNPSSMLSM  GI 2924369
128  DESSGFGSPRLVSSSSVLSSESEKGLARHGSAT 1568324
K P+V SS +L EQ+G+T
122  FWRGHEKVVQFVYSSGGQNLAGEGGQDQDQT  GI 2924369
461  PERGSPVPCQEEAGERLQGGKRR-----PALSFDVQVQAGE--HSPPKSSAG 1568324
P+GG FC +G G K PLL +L ++ PP PS A
150  PUGGAGQTLKPGGTDGFGSGDGSKTSKQUTSPSLHAWLEINLEKVLPPPTPQW  GI 2924369
514  EHSQFFPNP-PVSSQRTSKQKPSNSPLSPTE 1568324
++P+ PP+ P PS +P PE
210  KVRPEGLVLEPQPTWHEPTEPFSQNP-GVE  GI 2924369
653  EPGPLSPFGKLESSDQSPSPALQQQFQSAEDHMEGGRFADPQSG 1568324
E+P P G+SS P PVL+ +A QP G +PS G
246  DEEPAAGFQFQASSLPQDQFRLIEHLRLHAWLQFVLEHGADEPSCG  GI 2924369

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## (57) Abstract

The invention provides new human membrane channel proteins (MECHP) and polynucleotides which identify and encode MECHP. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating, or preventing disorders associated with expression of MECHP.

# **UNIQUEMENT A TITRE D'INFORMATION**

Codes utilisés pour identifier les Etats parties au PCT, sur les pages de couverture des brochures publiant des demandes internationales en vertu du PCT.

AL	Albanie	ES	Espagne	LS	Lesotho	SI	Slovénie
AM	Arménie	FI	Finlande	LT	Lituanie	SK	Slovaquie
AT	Autriche	FR	France	LU	Luxembourg	SN	Sénégal
AU	Australie	GA	Gabon	LV	Lettonie	SZ	Swaziland
AZ	Azerbaïdjan	GB	Royaume-Uni	MC	Monaco	TD	Tchad
BA	Bosnie-Herzégovine	GE	Géorgie	MD	République de Moldova	TG	Togo
BB	Barbade	GH	Ghana	MG	Madagascar	TJ	Tadjikistan
BE	Belgique	GN	Guinée	MK	Ex-République yougoslave de Macédoine	TM	Turkménistan
BF	Burkina Faso	GR	Grèce	ML	Mali	TR	Turquie
BG	Bulgarie	HU	Hongrie	MN	Mongolie	TT	Trinité-et-Tobago
BJ	Bénin	IE	Irlande	MR	Mauritanie	UA	Ukraine
BR	Brésil	IL	Israël	MW	Malawi	UG	Ouganda
BY	Bélarus	IS	Islande	MX	Mexique	US	Etats-Unis d'Amérique
CA	Canada	IT	Italie	NE	Niger	UZ	Ouzbékistan
CF	République centrafricaine	JP	Japon	NL	Pays-Bas	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norvège	YU	Yougoslavie
CH	Suisse	KG	Kirghizistan	NZ	Nouvelle-Zélande	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	République populaire démocratique de Corée	PL	Pologne		
CM	Cameroun	KR	République de Corée	PT	Portugal		
CN	Chine	KZ	Kazakstan	RO	Roumanie		
CU	Cuba	LC	Sainte-Lucie	RU	Fédération de Russie		
CZ	République tchèque	LI	Liechtenstein	SD	Soudan		
DE	Allemagne	LK	Sri Lanka	SE	Suède		
DK	Danemark	LR	Libéria	SG	Singapour		
EE	Estonie						

## INTERNATIONAL SEARCH REPORT

National Application No

PCT/US 99/20468

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C07K14/705 C07K14/47 C07K16/18 C07K16/28  
C12Q1/68 A61K38/17

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N C12Q A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>NAGASE ET AL.: "KIAA0599 Protein" EMBL DATABASE ACC NO 060339, 1 August 1998 (1998-08-01), XP002130489 -&amp; NAGASE ET AL.: "Prediction of the coding sequences of unidentified human genes. IX. The complete sequences of 100 new cDNA clones from brain which can code for large proteins in vitro." DNA RESEARCH, vol. 5, no. 1, 28 February 1998 (1998-02-28), pages 31-39, XP000878819 figures 1,3; table 1 --- -/-</p>	1-16,19

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

14 February 2000

Date of mailing of the international search report

19. 05. 2000

Name and mailing address of the ISA

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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
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Authorized officer

van Klompenburg, W

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BIEL ET AL.: "Molecular cloning and expression of a modulatory subunit of the cyclic nucleotide-gated cation channel" THE JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 271, no. 11, 15 March 1996 (1996-03-15), pages 6349-6355, XP002130490 figures 1-5 ---	1-16,19
A	DOYLE J L ET AL: "Ataxia, arrhythmia and ion-channel gene defects" TRENDS IN GENETICS,NL,ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, vol. 14, no. 3, 1 March 1998 (1998-03-01), pages 92-98, XP004108606 ISSN: 0168-9525 page 92, column 2; figures 1,2; tables 1,2 ---	1-16,19
A	US 5 670 488 A (GREGORY RICHARD J ET AL) 23 September 1997 (1997-09-23) column 2, line 13 - line 24; claim 13; examples 1,7-10 -----	1-16,19



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 99/20468

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
Although claim 19 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.: 17,18,20  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-20 (partially), see additional sheet, subject 1.

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 17,18,20

Claims 17, 18 and in part 20 refer to an antagonist and agonist of the polypeptides without giving a true technical characterization. Moreover, no such compounds are defined in the application. In consequence, the scope of said claims is ambiguous and vague, and their subject-matter is not sufficiently disclosed and supported (Art. 5 and 6 PCT). No search can be carried out for such purely speculative claims whose wording is, in fact, a mere recitation of the results to be achieved.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

## 1. Claims: 1-20 all partially

A substantially purified polypeptide comprising the amino acid sequence of SEQ ID NO:1 and fragments thereof. A variant polypeptide with at least 95% sequence identity to the abovementioned polypeptide.

A method for producing the abovementioned polypeptide.

A purified antibody which specifically binds said polypeptide. A pharmaceutical composition containing said polypeptide. A method of treatment comprising administering to a subject the abovementioned pharmaceutical composition. Agonist and antagonist of the abovementioned polypeptide and a method of treating or preventing a disorder comprising administering said antagonist to a subject.

An isolated and purified polynucleotide encoding the abovementioned polypeptide, preferably with the sequence of SEQ ID NO:19 and fragments thereof. A polynucleotide having a complementary sequence to the abovementioned polynucleotide or a variant polynucleotide having at least 95% sequence identity to the abovementioned polynucleotide or a variant polynucleotide which hybridizes under stringent conditions to the abovementioned polynucleotide.

An expression vector comprising at least a fragment of the abovementioned polynucleotide and a host cell comprising said expression vector.

Methods for detecting the abovementioned polynucleotide, the method comprising hybridization and detection of the hybridization complex.

## 2. Claims: 1-20 all partially

idem for SEQ ID NO:2 and SEQ ID NO:20

## 3. Claims: 1-20 all partially

idem for SEQ ID NO:3 and SEQ ID NO:21

## 4. Claims: 1-20 all partially

idem for SEQ ID NO:4 and SEQ ID NO:22

## 5. Claims: 1-20 all partially

idem for SEQ ID NO:5 and SEQ ID NO:23

## 6. Claims: 1-20 all partially

idem for SEQ ID NO:6 and SEQ ID NO:24

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

7. Claims: 1-20 all partially  
idem for SEQ ID NO:7 and SEQ ID NO:25
8. Claims: 1-20 all partially  
idem for SEQ ID NO:8 and SEQ ID NO:26
9. Claims: 1-20 all partially  
idem for SEQ ID NO:9 and SEQ ID NO:27
10. Claims: 1-20 all partially  
idem for SEQ ID NO:10 and SEQ ID NO:28
11. Claims: 1-20 all partially  
idem for SEQ ID NO:11 and SEQ ID NO:29
12. Claims: 1-20 all partially  
idem for SEQ ID NO:12 and SEQ ID NO:30
13. Claims: 1-20 all partially  
idem for SEQ ID NO:13 and SEQ ID NO:31
14. Claims: 1-20 all partially  
idem for SEQ ID NO:14 and SEQ ID NO:32
15. Claims: 1-20 all partially  
idem for SEQ ID NO:15 and SEQ ID NO:33
16. Claims: 1-20 all partially  
idem for SEQ ID NO:16 and SEQ ID NO:34
17. Claims: 1-20 all partially  
idem for SEQ ID NO:17 and SEQ ID NO:35

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

18. Claims: 1-20 all partially

idem for SEQ ID NO:18 and SEQ ID NO:36

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/20468

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5670488 A	23-09-1997	AU 4365597 A	12-02-1998
		AU 680459 B	31-07-1997
		AU 5734994 A	22-06-1994
		CA 2145641 A	09-06-1994
		EP 0673431 A	27-09-1995
		EP 0905253 A	31-03-1999
		EP 0911413 A	28-04-1999
		JP 8503855 T	30-04-1996
		WO 9412649 A	09-06-1994
		US 5882877 A	16-03-1999
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## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>FP-0589 PCT</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 99/ 20468</b>	International filing date (day/month/year) <b>02/09/1999</b>	(Earliest) Priority Date (day/month/year) <b>02/09/1998</b>
Applicant <b>INCYTE PHARMACEUTICALS, INC. et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☒ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☒ furnished subsequently to this Authority in computer readable form.

☒ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

## 4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

## 6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1-

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 99/20468

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claim 19 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.: 17, 18, 20  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
  
1-20 (partially), see additional sheet, subject 1.

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.



## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 17,18,20

Claims 17, 18 and in part 20 refer to an antagonist and agonist of the polypeptides without giving a true technical characterization. Moreover, no such compounds are defined in the application. In consequence, the scope of said claims is ambiguous and vague, and their subject-matter is not sufficiently disclosed and supported (Art. 5 and 6 PCT). No search can be carried out for such purely speculative claims whose wording is, in fact, a mere recitation of the results to be achieved.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

## 1. Claims: 1-20 all partially

A substantially purified polypeptide comprising the amino acid sequence of SEQ ID NO:1 and fragments thereof. A variant polypeptide with at least 95% sequence identity to the abovementioned polypeptide.

A method for producing the abovementioned polypeptide.

A purified antibody which specifically binds said polypeptide. A pharmaceutical composition containing said polypeptide. A method of treatment comprising administering to a subject the abovementioned pharmaceutical composition. Agonist and antagonist of the abovementioned polypeptide and a method of treating or preventing a disorder comprising administering said antagonist to a subject.

An isolated and purified polynucleotide encoding the abovementioned polypeptide, preferably with the sequence of SEQ ID NO:19 and fragments thereof. A polynucleotide having a complementary sequence to the abovementioned polynucleotide or a variant polynucleotide having at least 95% sequence identity to the abovementioned polynucleotide or a variant polynucleotide which hybridizes under stringent conditions to the abovementioned polynucleotide.

An expression vector comprising at least a fragment of the abovementioned polynucleotide and a host cell comprising said expression vector.

Methods for detecting the abovementioned polynucleotide, the method comprising hybridization and detection of the hybridization complex.

## 2. Claims: 1-20 all partially

idem for SEQ ID NO:2 and SEQ ID NO:20

## 3. Claims: 1-20 all partially

idem for SEQ ID NO:3 and SEQ ID NO:21

## 4. Claims: 1-20 all partially

idem for SEQ ID NO:4 and SEQ ID NO:22

## 5. Claims: 1-20 all partially

idem for SEQ ID NO:5 and SEQ ID NO:23

## 6. Claims: 1-20 all partially

idem for SEQ ID NO:6 and SEQ ID NO:24

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

7. Claims: 1-20 all partially  
idem for SEQ ID NO:7 and SEQ ID NO:25
8. Claims: 1-20 all partially  
idem for SEQ ID NO:8 and SEQ ID NO:26
9. Claims: 1-20 all partially  
idem for SEQ ID NO:9 and SEQ ID NO:27
10. Claims: 1-20 all partially  
idem for SEQ ID NO:10 and SEQ ID NO:28
11. Claims: 1-20 all partially  
idem for SEQ ID NO:11 and SEQ ID NO:29
12. Claims: 1-20 all partially  
idem for SEQ ID NO:12 and SEQ ID NO:30
13. Claims: 1-20 all partially  
idem for SEQ ID NO:13 and SEQ ID NO:31
14. Claims: 1-20 all partially  
idem for SEQ ID NO:14 and SEQ ID NO:32
15. Claims: 1-20 all partially  
idem for SEQ ID NO:15 and SEQ ID NO:33
16. Claims: 1-20 all partially  
idem for SEQ ID NO:16 and SEQ ID NO:34
17. Claims: 1-20 all partially  
idem for SEQ ID NO:17 and SEQ ID NO:35

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

18. Claims: 1-20 all partially

idem for SEQ ID NO:18 and SEQ ID NO:36

## INTERNATIONAL SEARCH REPORT

International Application No

CT/US 99/20468

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C07K14/705 C07K14/47 C07K16/18 C07K16/28  
C12Q1/68 A61K38/17

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N C12Q A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>NAGASE ET AL.: "KIAA0599 Protein" EMBL DATABASE ACC NO 060339, 1 August 1998 (1998-08-01), XP002130489 ✓ -&amp; NAGASE ET AL.: "Prediction of the coding sequences of unidentified human genes. IX. The complete sequences of 100 new cDNA clones from brain which can code for large proteins in vitro." DNA RESEARCH, vol. 5, no. 1, 28 February 1998 (1998-02-28), pages 31-39, XP000878819 ✓ figures 1,3; table 1 --- -/-</p>	1-16,19

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## ° Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

14 February 2000

Date of mailing of the international search report

19. 05. 2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
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Authorized officer

van Klompenburg, W

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/20468

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BIEL ET AL.: "Molecular cloning and expression of a modulatory subunit of the cyclic nucleotide-gated cation channel" THE JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 271, no. 11, 15 March 1996 (1996-03-15) ✓, pages 6349-6355, XP002130490 ✓ figures 1-5	1-16,19
A	DOYLE J L ET AL: "Ataxia, arrhythmia and ion-channel gene defects" ✓ TRENDS IN GENETICS,NL,ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, vol. 14, no. 3, 1 March 1998 (1998-03-01), pages 92-98, XP004108606 ISSN: 0168-9525 page 92, column 2; figures 1,2; tables 1,2	1-16,19
A	US 5 670 488 A (GREGORY RICHARD J ET AL) 23 September 1997 (1997-09-23) column 2, line 13 - line 24; claim 13; examples 1,7-10 -----	1-16,19

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/20468

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5670488 A	23-09-1997	AU 4365597 A	12-02-1998
		AU 680459 B	31-07-1997
		AU 5734994 A	22-06-1994
		CA 2145641 A	09-06-1994
		EP 0673431 A	27-09-1995
		EP 0905253 A	31-03-1999
		EP 0911413 A	28-04-1999
		JP 8503855 T	30-04-1996
		WO 9412649 A	09-06-1994
		US 5882877 A	16-03-1999
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# PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

REC'D 23 JAN 2001

WIPO

PCT

(PCT Article 36 and Rule 70)

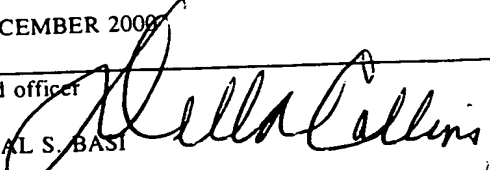
Applicant's or agent's file reference PF-058 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/20468	International filing date (day/month/year) 02 SEPTEMBER 1999	Priority date (day/month/year) 02 SEPTEMBER 1998
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant INCYTE PHARMACEUTICALS, INC.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets.  
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 29 MARCH 1999	Date of completion of this report 17 DECEMBER 2000
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer  NIRMAL S. BASI
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0196

Form PCT/IPEA/409 (cover sheet) (July 1998)\*

DELLA MAE COLLINS  
PARALEGAL SPECIALIST  
TECHNOLOGY CENTER 1600



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/20468

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

☒ the international application as originally filed

☒ the description:

pages 1-77, as originally filed

pages NONE, filed with the demand

pages NONE, filed with the letter of \_\_\_\_\_

☒ the claims:

pages 78-79, as originally filed

pages NONE, as amended (together with any statement) under Article 19

pages NONE, filed with the demand

pages NONE, filed with the letter of \_\_\_\_\_

☒ the drawings:

pages 1-16, as originally filed

pages NONE, filed with the demand

pages NONE, filed with the letter of \_\_\_\_\_

☒ the sequence listing part of the description:

pages 1-43, as originally filed

pages NONE, filed with the demand

pages NONE, filed with the letter of \_\_\_\_\_

### 2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☒ contained in the international application in printed form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages NONE

☒ the claims, Nos. NONE

☒ the drawings, sheets/fig NONE

### 5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/US99/20468

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application.

☒ claims Nos. 17, 18 AND 20

because:

☐ the said international application, or the said claim Nos. \_ relate to the following subject matter which does not require international preliminary examination (*specify*).

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_ are so unclear that no meaningful opinion could be formed (*specify*).

☐ the claims, or said claims Nos. \_ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 17, 18 AND 20.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/20468

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. statement

Novelty (N)

Claims 1-16 AND 19 YES  
Claims NONE NO

Inventive Step (IS)

Claims 1-16 AND 19 YES  
Claims NONE NO

Industrial Applicability (IA)

Claims 1-16 AND 19 YES  
Claims NONE NO

### 2. citations and explanations (Rule 70.7)

Claims 1-16 and 19 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest polypeptide comprising SEQ ID NOs: 1-18, polynucleotide encoding said polypeptides and methods of their use in diagnosis of disease state and treatment of disease.

Claims 1-16 and 19 have industrial applicability as set forth in PCT Article 33(4), because the protein of instant invention can be used to produce antibody.

-----'NEW CITATIONS'-----  
NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/20468

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**CLASSIFICATION:**

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C12N 15/12; C07K 14/705, 14/47, 16/18, 16/28; C12Q 1/68; A61K 38/17 and US CL.: 435/7.1, 7.2; 530/300, 350, 69.1, 320.1; 536/23.5, 24.3 I